

COVERTS CROSSING BRIDGE
(Lawrence County Bridge No. 12)
Spanning the Mahoning River Along Township
Road T-372 (Covert Road)
Edinburg vicinity
Lawrence County
Pennsylvania

HAER No. PA-474

HAER
PA
37-EDIN.V.
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HISTORIC AMERICAN ENGINEERING RECORD
COVERTS CROSSING BRIDGE
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Location: Spanning the Mahoning River Along
Township Road T-372 (Covert Road)
Edinburg vicinity
Lawrence County
Pennsylvania
USGS Bessemer, Pennsylvania Quadrangle, 1:24,000
UTM: 17.549280.4538300

Date of Construction: 1887

Engineers: Unknown

Builder: Unknown

Present Owner: Lawrence County Commissioners
New Castle, Pennsylvania 16101

Present Use: The one-lane bridge is presently open to vehicular traffic and is scheduled for removal and replacement.

Significance: The Coverts Crossing Bridge is an excellent early example of a steel cantilever, through-truss bridge possessing good integrity of design, workmanship, and materials. The bridge is representative of the many mid-scale rural bridges built throughout Pennsylvania and other eastern states during the last quarter of the nineteenth century which emphasized reduced material requirements and increased load-handling capacities. The construction of the bridge in 1887 was part of early, pre-automotive improvements to the local road system connecting Union and Mahoning Townships to the nearby city of New Castle and more distant areas economic centers, such as Pittsburgh.

Project Information This documentation was conducted on behalf of the Lawrence County Bridge Department, New Castle, Pennsylvania, in April through July, 1998. The recordation was conducted as a mitigative measure, prior to removal and replacement of the existing Coverts Crossing Bridge.

Joel S. Dzodin
Senior Archaeologist, GAI Consultants, Inc.
570 Beatty Road
Monroeville, Pennsylvania 15146
September 1, 1998

Summary Description of Bridge and Setting

The Coverts Crossing Bridge is situated approximately 2.5 miles northwest of the city of New Castle, at the boundary between Union and Mahoning Townships in Lawrence County, Pennsylvania, and carries Covert Road over the Mahoning River. The bridge was built in 1887, in response to an 1878 petition by local inhabitants, who complained of frequent flooding of the highway at "Covert's Ford". Throughout most of the nineteenth century, the project parcel was situated immediately adjacent to important canal and railroad arteries and contained a grist mill which played a central role in the social and economic life of the area's many farmers. Contemporary maps (Hopkins, 1872) record the location of Coverts Station on the line of the Lawrence Railroad, immediately southwest of the grist mill (the site of the present bridge), as well as the "Cross-cut Canal", a local segment of the Ohio Division of the Pennsylvania Canal, situated approximately 700 feet north of the Coverts Crossing Bridge. Despite its relative proximity to the City of New Castle, the project area remained largely rural in character throughout the late nineteenth century and first half of the twentieth century, and the bridge's visual setting and viewshed have changed little since its construction in 1887.

The two-span, steel cantilever through-truss bridge measures 301 feet (91.6 meters) in overall length. The one lane bridge consists of cantilevered northern and southern truss spans measuring 133 feet (40.52 meters) and 99.6 feet (30.4 meters) respectively; these are joined mid-stream by a 68-foot (21 meter) long central linking section supported by a pier of finely dressed and closely-fitted mortared limestone blocks. The one-lane bridge has a 14.2 feet (4.32 meter) wide cartway (measured curb to curb), and the bridge deck consists of badly deteriorated loose wooden slats that rest on heavy square wooden stringers. The curbs consist of 2" by 6" planks and the stringers are 3 1/2" x 9" timbers. The stringers rest upon a series of heavy gauge steel I-beam floorbeams positioned at intervals of approximately 16.5 feet (5 meters). The unweathered character of the heavy wooden stringers indicates that they are not original. Torsional stiffening across the structure is provided by a series of diagonal struts along the eastern and western bridge elevations and by top and bottom lateral bracing along the upper and lower bridge chords.

The bridge rests upon massive rockface dressed and mortared limestone block abutments and a central, mid-stream limestone pier. The northern abutments include wing-wall and straight-wall elements, and the southern abutments are both wing-walls. The abutments range from nine courses measuring 11.8 feet (3.61 meters) high on the southeast, to 11 courses measuring 15 feet (4.63 meters) in height on the northwest. Abutment widths vary between 35 and 50 inches (90 to 126 cm). In response to the chronic and severe flooding at the bridge, roughly-dressed, dry-laid limestone block retaining walls were installed beside each of the four original abutments, sometime after the 1887 completion of the bridge. Both the northwestern and southwestern retaining walls have partially collapsed.

The Coverts Crossing Bridge was built at a time of technological transition and innovation, reflected in both its relatively early use of steel rather than iron, and in its cantilever design. Its construction in 1887 occurred within 10 years of the nation's first all-steel truss bridge, erected over the Missouri River by the Chicago & Alton Railroad in 1878-1879. By the first decade of the twentieth century, steel had largely replaced cast iron in American truss bridge construction (Weitzman 1980:75). Cantilevered American bridges were relatively rare until the final quarter of the nineteenth century and became popular following World War I for longer highway crossings over major rivers (Pennsylvania Historical and Museum Commission [PHMC] 1986:125; Jackson 1988:30-31). The use of a cantilever truss design in the Coverts Crossing Bridge was a relatively early engineering response to its overall length of 301 feet (91.6 meters) across the Mahoning River, a major regional drainage.

The bridge's transitional character is also evident in its reliance on both pin connections and rivets to join its various structural members. The use of rivets in American bridge construction was rare before the 1890s. Historically, American bridge builders continued to use pin connections long after their British counterparts had switched to the use of rivets. During the late nineteenth century, this American technological conservatism was driven by both economic factors and safety considerations. Bridges using pin connections required substantially less construction time and were considered safer than structures joined by rivets. Despite these perceived advantages, engineers recognized early on that riveted bridges provided greater overall rigidity than pin-connected structures and required fewer web members, such as counters, vibration rods and lateral struts. With the development of portable pneumatic drivers during the late nineteenth century, rivets could be installed more quickly and with greater reliability; this led to a marked decline in the construction of pin connection bridges after circa 1890 (Weitzman 1980:75, 79-80).

Several other engineering aspects of the bridge reflect an unusual degree of non-standardization in design and construction. These include the use of pin-connected eyebars to form the lower bridge chord of the southernmost truss section, while riveted steel channels (girder guides) were used to form the lower chords along the central and northern truss sections. Also notable are the markedly divergent ornamental styles found on the northern and southern portal gussets; decoration on the northern gusset consists of a geometric field of circles, while the southern gusset involves a cloverleaf-like pattern. The use of these various non-standardized components suggests that the bridge fabricators utilized whatever stock materials happened to be on hand when the materials for the bridge were ordered in 1887, and/or that no specific, standardized pattern set was available at the time of construction.

Lawrence County Bridge Department records do not identify the individuals or companies involved in the 1887 construction of the Coverts Crossing Bridge, and provide little information regarding its repair history. Recent visual inspection indicates that the bridge retains a moderate-to-high degree of material, structural, and visual integrity. Although most original structural components remain in place, the bridge has undergone several alterations and repairs. These include the circa 1985 bridge deck replacement using modern 2" x 4" timbers, and the undocumented replacement of the bridge's wooden stringers. The existing deck is

presently in very poor condition, and approximately 90 per cent of its constituent timbers are loose and badly weathered (Taylor Engineering 1996; Humphrey, personal communication 1998). Evident bridge repairs include the recent installation of secondary steel reinforcement beams on the eastern and western endposts of the northern portal. Despite its good integrity, the bridge is in poor condition, due to extensive deterioration of basic structural components, including the delamination of several steel floorbeams, corrosion of various verticals, struts, and pin connections, and the loss of several portal rivets and bridge bearing seat hardware fasteners. Other alterations include the apparent loss of manufacturers plaques from northern and southern portals.

Euroamerican settlement in the Coverts Crossing vicinity dates back to the late eighteenth century and comprises part of the early historic immigration into what later became Lawrence County and Mahoning and Union Townships. Like other sections of the county, this early settlement occurred mainly near streams and other sources of hydropower and in locations favorable to agriculture and timbering. Mahoning Township was one of the thirteen original townships of Lawrence County, and the venue for some of the region's earliest settlement. This included a pioneering group from Allegheny City (now Pittsburgh's North Side), which arrived by canoe in 1793 to claim the lands along the Mahoning River. This party included Francis McFarland, James, John, and George McWilliams, John Small, and Henry McCoy. After bringing their families from Allegheny City in 1794, these settlers established farmsteads and followed a largely self-sufficient lifestyle that included hunting and trapping. They were soon followed by other late eighteenth-century and early nineteenth-century settlers, including Michael Book, William Park, Joseph Ashton, Andrew Patterson, Arney Biddle and John McComb (Richards 1968:101-102).

Settlement in Mahoning and Union Townships and the Coverts Crossing vicinity remained largely agricultural throughout most of the nineteenth century. During this period, regional population growth and economic development were stimulated by improvements in local and regional transportation, beginning with the 1838 opening of the Ohio Division of the Pennsylvania and Ohio Canal. Known locally as the "Cross-cut Canal", the Ohio Division ran between Mahonington, Pennsylvania and Cleveland, Ohio, and passed within 500 feet of the present bridge location. The canal operated until it was abandoned around 1871 and was later adapted for rail traffic by the Pittsburgh and Lake Erie Railroad. Conrail trains still pass along the line of the old canal, immediately north of the Coverts Crossing Bridge. These transportation improvements also contributed to the growth of the nearby village of Edinburg, located approximately two miles northwest of Coverts Crossing. Established by Crawford White in 1824, Edinburg became a small but important local center for provisioning nearby farming families, and included a grist mill, canal warehouse, a coopering shop, hotel, and several blacksmith shops (Johnson 1916: 77-78, 89, 92; Richards 1968:103-104).

Mid-nineteenth-century settlement in the immediate bridge vicinity centered on a grist mill formerly located near the southeastern abutments of the present bridge. As early as 1852, the importance of the mill was recognized by local residents of Mahoning Township, who petitioned for a road to be built "from Edinburg to Coverts Mill" (Lawrence County Records, 1852). Other mid to late nineteenth-century documents refer to the bridge venue simply as "Covert's Ford",

suggesting that the present 1887 structure was the first bridge built at this location (Lawrence County Records, 1878). Except for the "L. Covert" grist mill shown on an 1872 G. M. Hopkins map of Union Township, no specific information about Covert's Mill was located during this recordation, and one long-time local informant was unaware of a former mill site near the bridge (Chambers, personal communication 1998).

The construction of the Coverts Crossing Bridge over the Mahoning River occurred during a period of increasing regional economic diversification and interaction between the area's many farming settlements and important regional centers, like New Castle and Pittsburgh. The shift toward a technologically more complex, non-agricultural economy during the mid-to-late nineteenth century centered on the increasing exploitation of local and regional iron, oil, limestone, and coal resources and was driven by Pittsburgh's growing regional importance as a major economic and transportation center. The increasing inability of Pittsburgh's nascent iron manufactories to meet the burgeoning demands for iron resulted in the establishment of numerous charcoal-fired smelting furnaces throughout Lawrence County during the period from circa 1840 to the Civil War. This trend was augmented by the area's plentiful natural resources, including timber for charcoal and limestone, and by readily available sources of hydropower along streams and creeks throughout the county. Industrial growth in southwestern Pennsylvania was further stimulated by a protective tariff which promoted local and regional enterprises. Although the early iron industry in Lawrence County never operated on the scale seen in nearby Mercer and Venango counties due to the relative paucity of iron ore, it nevertheless contributed to the economic diversification of the local agrarian economy (Richards 1968:155).

The rural iron industry entered a period of rapid decline following the repeal of the tariff in 1848, and was especially hard hit by British dumping of iron onto the American market (Hutchison 1967:iii and 7). This led to a period of regional industrial and economic stagnation during the 1850s, which ended only with the discovery of oil near Titusville in nearby Crawford County by Colonel Edwin L. Drake in 1859. This resulted in a regional oil boom that quickly expanded into Lawrence County and Mahoning and Union Townships. Although the economic effects of the oil boom were less pronounced in Lawrence County than in other nearby Pennsylvania counties, the exploitation of oil nevertheless contributed to local economic growth. In the project vicinity, oil production played a small role in the local, non-agricultural economy, as reflected in several nearby oil wells recorded on the 1872 Hopkins map.

Except for a topsoil farm northwest of the Coverts Crossing Bridge and a largely hidden slag dump immediately northeast of the bridge, the surrounding environs have undergone little development since the bridge was built in 1887, and settlement has retained its largely rural character down to the present day. The stability of the surrounding landscape, along with the bridge's high degree of visual integrity, have helped preserve the nineteenth-century mood and feeling of the bridge's physical setting and viewshed. Despite its severe deterioration, the Coverts Crossing Bridge remains an impressive example of late nineteenth-century engineering, which clearly reflects an evolutionary trend in bridge design and innovation, as reflected in its early use of steel, rivet fasteners, and cantilever design.

SOURCES OF INFORMATION AND OTHER REFERENCES

A. Institutional Sources

Carnegie Library of Pittsburgh, Pennsylvania Division
Hunt Library, Carnegie Mellon University, Pittsburgh
Lawrence County Historical Society, New Castle, Pennsylvania
Lawrence County Bridge Department, New Castle, Pennsylvania
New Castle Public Library, New Castle, Pennsylvania

B. References

Binder, Frederick M.

Coal Age Empire - Pennsylvania Coal and Its Utilization to 1860. Harrisburg: Pennsylvania Historical and Museum Commission, 1974.

Chambers, Wilbur

Personal Communication, 1998. Mr. Chambers is an 85-year old long-time resident of the project vicinity. He provided specific information about early twentieth-century settlement near the immediate bridge.

Encyclopedia Britannica, Inc.

Encyclopedia Britannica. Entry on bridges, Volume 4:125. Chicago, 1955.

Hopkins, Griffith M.

Atlas of the County of Lawrence, and the State of Pennsylvania. Philadelphia, 1872.

Humphrey, William

Frank B. Taylor Engineering, Inc., Personal Communication Regarding Coverts Crossing Bridge Deck Replacement, 1998.

Hutchison, Gary R.

The Iron Furnace Industry of Venango County. MA Research Project, Slippery Rock State College, Pennsylvania, 1967. Copy on file, Franklin Public Library, Franklin, Pennsylvania.

Jackson, Donald C.

Great American Bridges, A National Trust Guide. Washington, D.C.: The Preservation Press, National Trust for Historic Preservation, 1988.

Johnson, George W.

History of the Development of Transportation in Lawrence County. New Castle, Pennsylvania: Brindle Printing Company, 1916.

Lawrence County Records

Record of Road, Bridges and Divisions of Townships. Book 1, Covering January, 1848 to December 6, 1857. Entry for 1852 (Page 122). Original on file, Lawrence County Historical Society, New Castle, Pennsylvania.

Mock, Elizabeth B.

The Architecture of Bridges. New York: The Museum of Modern Art, 1949.

Pennsylvania Historical and Museum Commission

Historic Highway Bridges In Pennsylvania. Harrisburg, 1986.

Plowden, David

Bridges, The Spans of North America. New York: W.W. Norton & Company, 1974.

Richards, Bart

Lawrence County, A Compact History. New Castle: New Castle Area School District, 1968.

Shank, William H.

Historic Bridges of Pennsylvania. York, Pennsylvania: American Canal & Transportation Center, 1980.

Taylor Engineering (Frank B. Engineering, Inc.), *Bridge Inspection Report for Lawrence County Coverts Crossing Bridge (No. 12)*, 1996.

United States Geological Survey

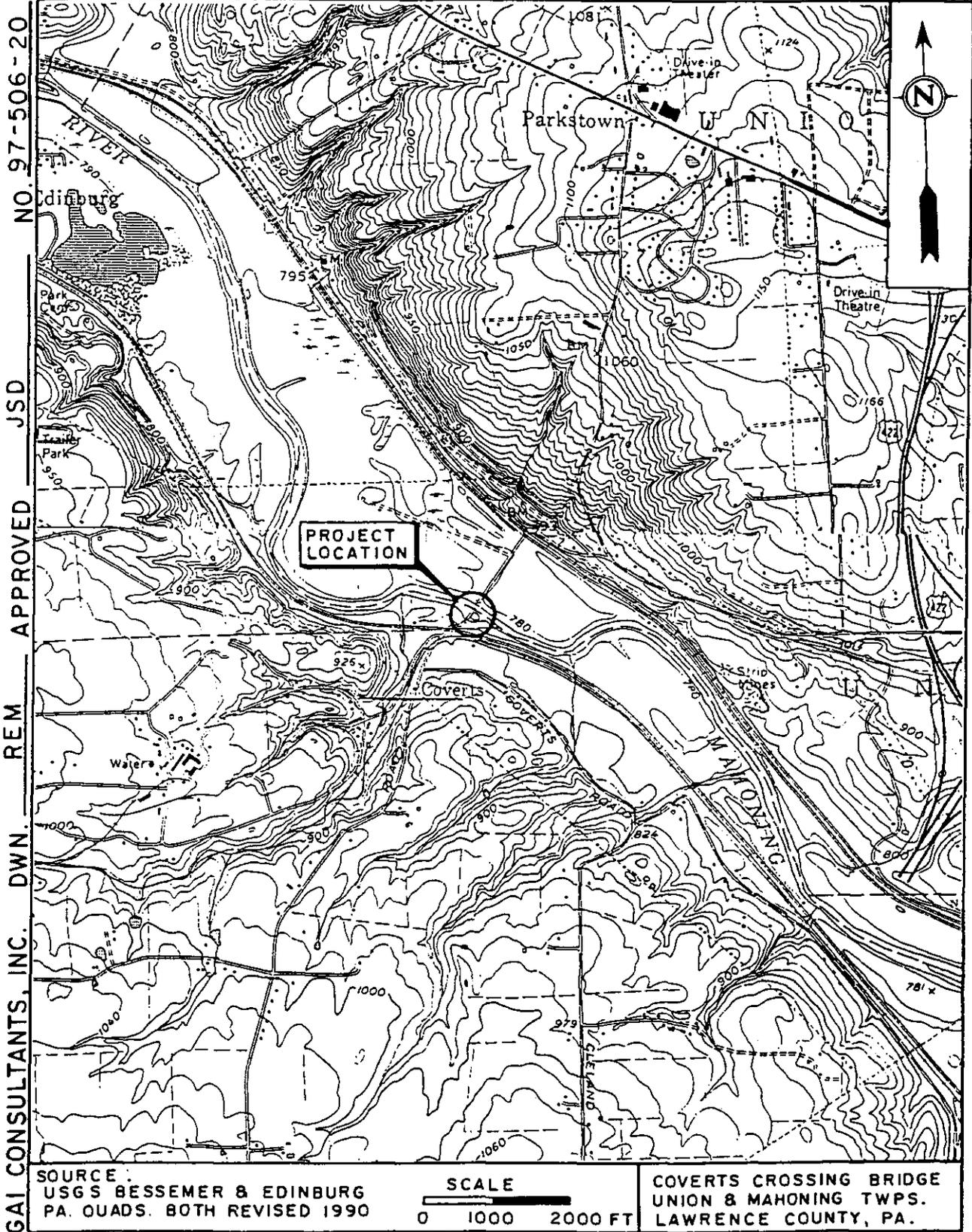
7.5 Minute Series Topographic Map: Bessemer, Pennsylvania Quadrangle, 1958. Photorevised 1990.

7.5 Minute Series Topographic Map: Edinburg, Pennsylvania Quadrangle, 1958. Photorevised 1990.

Weitzman, David

Traces of the Past. New York: Scribner's, 1980.

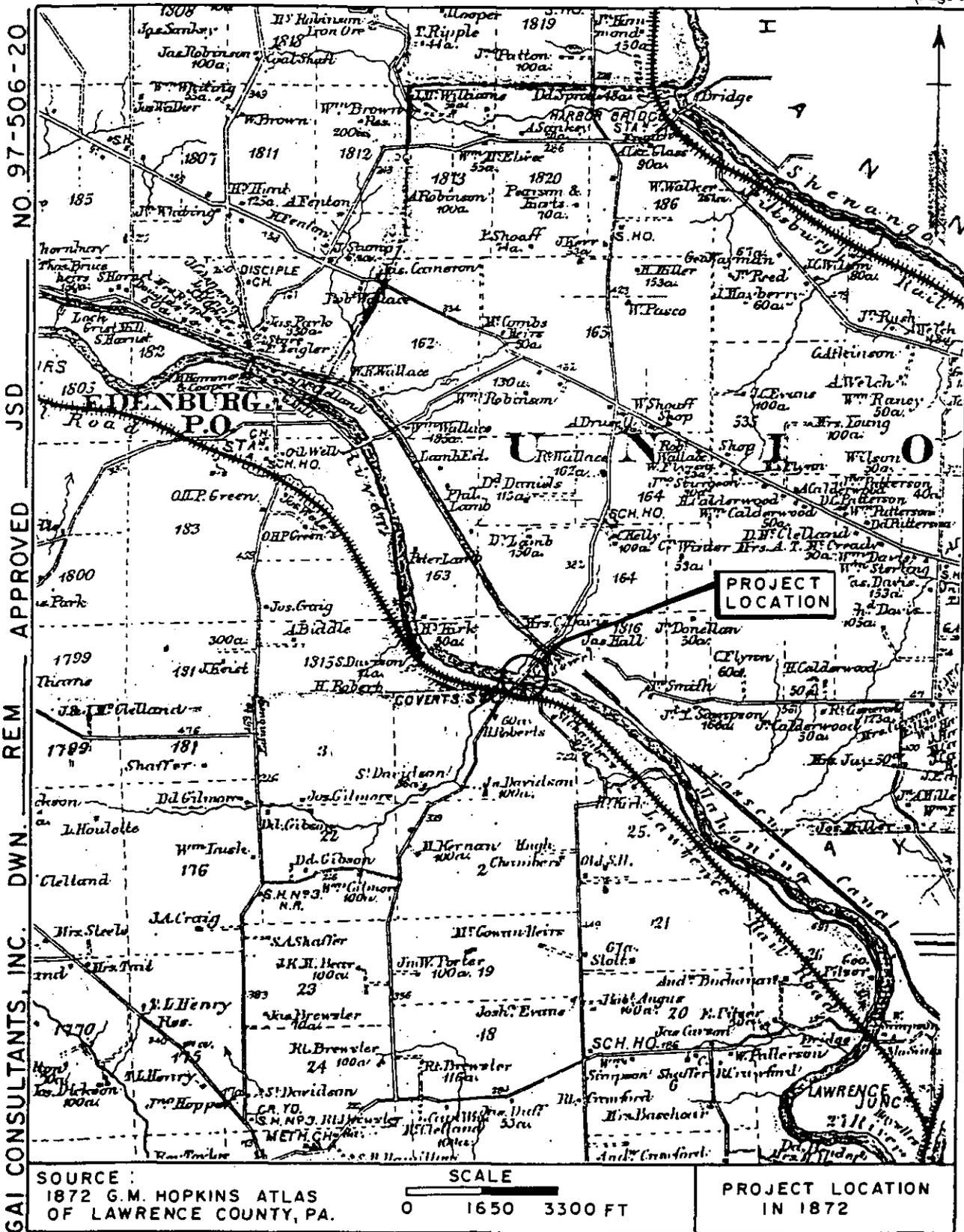
Note: During this recordation, no historic photographs of the Coverts Crossing Bridge were found at the Carnegie Library of Pittsburgh, the Lawrence County Historical Society in New Castle, Pennsylvania, or the New Castle Public Library.



SOURCE:
USGS BESSEMER & EDINBURG
PA. QUADS. BOTH REVISED 1990

SCALE
0 1000 2000 FT

COVERTS CROSSING BRIDGE
UNION & MAHONING TWP.
LAWRENCE COUNTY, PA.



ADDENDUM TO:
COVERTS CROSSING BRIDGE
(Lawrence County Bridge No. 12)
Pennsylvania Historic Bridge Recording Project III
Spanning Mahoning River along Township Route 372 (Covert Road)
New Castle vicinity
Lawrence County
Pennsylvania

HAER No. PA-474

PHOTOGRAPHS

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National Park Service
U.S. Department of the Interior
1849 C St. NW
Washington, DC 20240

HISTORIC AMERICAN ENGINEERING RECORD

ADDENDUM TO
COVERTS CROSSING BRIDGE
(Lawrence County Bridge No. 12)

HAER No. PA-474

This is an addendum to a 9 page report previously transmitted to the Library of Congress.

LOCATION: Spanning the Mahoning River along Township Road T-372 (Covert Road), approximately 0.5 mile south of the intersection of Township Roads T-450 and T-372, in Union and North Beaver Townships, New Castle vicinity, Lawrence County, Pennsylvania.

Note that the original documentation of this bridge erroneously placed the bridge in the Edinburg vicinity. The 2002 research has shown that the address should actually be the New Castle vicinity. The address has been changed, therefore, to New Castle vicinity.

DATE OF
CONSTRUCTION:

1887

PRESENT OWNER:

Lawrence County

DESIGNER:

Unknown

BUILDER:

Morse Bridge Company, Youngstown, Ohio

PRESENT USE:

Vehicular traffic

SIGNIFICANCE:

The Coverts Crossing Bridge consists of two bridge segments, as it combines a reused bridge with a new one. It is a significant example of a metal truss bridge because it exhibits transitional technology with its use of steel, cantilevering, and two kinds of joinery methods. Both pin and rivet connection techniques are in evidence on this bridge.

HISTORIAN:

Richard Vidutis, August 2002

PROJECT
INFORMATION:

The Pennsylvania Historic Bridge Recording Project III is part of the Historic American Engineering Record (HAER), a long-range program documenting historically significant engineering,

industrial, and maritime sites in the United States. The National Park Service, U.S. Department of the Interior, administers the HAER program. The Pennsylvania Historic Bridges Recording Project III was co-sponsored during the summer of 2002 by HAER under the general direction of E. Blaine Cliver, Chief; and the Pennsylvania Department of Transportation (PENNDOT), Bureau of Design, Dean A. Schreiber, Director; and the Pennsylvania Historical and Museum Commission, Brent D. Glass, Executive Director and State Historic Preservation Officer. Ms. Kara Russell of the Bureau of Design's Environmental Quality Assurance Division served as principal liaison.

The fieldwork, measured drawings, historical reports, and photographs were prepared under the direction of Eric DeLony, Chief of HAER. The team consisted of Architects—Todd Croteau, Project Leader (HAER Architect), Roland S. Flores, Field Supervisor (HAER Architect), Marcy Ann Giannunzio (University of Michigan, Ann Arbor), Katherine Marie Kozarek (University of California, Berkeley), Sara Kryda (Illinois Institute of Technology), Jenna Michelle Murphy (University of Detroit-Mercy), Sandra Christine Pires (ICOMOS—Portugal); Dr. Linda S. Phipps and Dr. Richard Vidutis served as project historians under the direction of Dr. Richard O'Connor (Senior HAER Historian). Jose C. Colon (Pennsylvania State University, State College) was the project engineer and Professor Thomas E. Boothby, Ph.D., PE, RA (Pennsylvania State University, State College) was the consulting engineer. Jet Lowe (HAER photographer) took all large format photography. Justine Christianson (HAER Historian) prepared all documentation for transmittal to the Library of Congress.

INTRODUCTION

This addendum report supplements a report written in September 1998 by Joel S. Dzodin. It contains historical data and analytical observations that will expand on the excellent report prepared by Mr. Dzodin.¹

The Coverts Crossing Bridge (Figure 1) was the first bridge built at Covert's Ford in 1887 by the Morse Bridge Company of Youngstown, Ohio, in response to petitions by local residents of Union, Mahoning and North Beaver Townships, who complained about frequent flooding of the highway leading to New Castle. The crossing sits in Lawrence County, Pennsylvania about 2.5 miles northwest of New Castle and carries Covert Road over the Mahoning River.

Human occupation by Amer-Indians at the river crossing dates back to the Late Archaic and Late Woodland periods with Euro-American settlement of the vicinity beginning in the late eighteenth century. Covert's Crossing eventually developed into an important social and economic center in the lives of local farmers as a gristmill location. It was serviced by a segment of the Ohio Division of the Pennsylvania Canal 500' to the north known as the Cross-Cut Canal and a railroad stop for the Lawrence Railroad called Covert's Station.

Lawrence County documents suggest that the Coverts Crossing Bridge consists of two distinct bridge segments—a reused bridge at the south end and a newly erected one at the north end with both segments meeting over a pier in mid-river. This would explain the bridge's apparent non-standardization, or mix, of design and construction.

HISTORY OF THE BRIDGE

Little has been recorded about the Coverts and their settlement of the land surrounding Covert's Crossing.² The most prominent Covert to emerge in the wider New Castle area was John W. Covert, a well-known physician born in Covert's Crossing in 1837. His short obituary

¹ Mr. Dzodin's report erroneously places Covert's Crossing in part in Mahoning Township. Actually, Covert's Crossing is situated on the border of Union and North Beaver Townships. Also, Mr. Dzodin did not have access to Lawrence County Commissioners Minutes that clearly identify the builder of the Coverts Crossing Bridge as the Morse Bridge Company. The firm may have reused a bridge from New Castle as part of the structure's ensemble over the Mahoning River at Covert's Crossing.

² The site of the project area has been called by different names throughout its history including Covert's Mill, Covert's Ford, Covert's Station (No. 3), and finally Covert's Crossing.

mentions that the ancestral Coverts (Luke Covert, who married Cornelia Van Zandt in 1768) came from Holland and settled in Brooklyn, New York. John W. Covert's parents were William (also a physician³) and Prudence, who had five other children while living at Covert's Crossing.⁴ Historic maps from 1872 of adjacent Union and North Beaver Townships indicate that an L. Covert owned four acres with a gristmill at Covert's Station along the Lawrence Rail Road. Both maps clearly show a crossing over the Mahoning River.⁵

Geographically, Covert's Crossing, straddling both Union and North Beaver townships over the Mahoning River, is equidistantly located between Edinburg to the northwest, New Castle to the east, and Mt. Jackson to the south and was a transportation focal point where roads, railroads, and a canal converged. In time, Covert's Crossing grew in importance to the three neighboring townships as a business and travel destination for farmers bringing grain to be processed at the gristmill, as a train stop beginning on the Lawrence Rail Road line for the area's inhabitants, and possibly as the residence of the area's physician (William Covert) who lived there with his family during at least the first half of the nineteenth century. Its importance was further enhanced by its location approximately 500' south from the Cross-cut Canal (the Ohio division of the Pennsylvania and Ohio Canal), which eventually was abandoned in 1871. The Pittsburgh and Lake Erie Railroad reconstructed the length of the canal as a railway, and it still functions as a railroad to this day.⁶

The growing necessity for the region's inhabitants to gain access to the facilities at Covert's Crossing can be seen at first in the number of petitions from citizens from the three surrounding townships for road improvements to Covert's Crossing, and then in the petitions for a bridge to be built across the Mahoning River. With the growth of population in Lawrence County and the increase of traffic along the old roads, citizens began to petition the county for road improvements. In December 1851, citizens of North Beaver Township submitted one such

³ Aaron L. Hazen, 20th Century History of New Castle and Lawrence County, Pennsylvania and Representative Citizens (Chicago: Richmond-Arnold Publishing Co., 1908), 173.

⁴ New Castle News, May 19, 1919, p. 1.

⁵ Union and North Beaver Townships, Atlas of the County of Lawrence and the State of Pennsylvania (Philadelphia: G.M. Hopkins & Co., 1872), 17, 31.

⁶ George W. Johnson, History of Development of Transportation in Lawrence County (New Castle, Pennsylvania: Brindle Printing Co., 1916).

petition for a road from the Mahoning Bridge to Covert's Mill.⁷ As the place name suggests, the activity at Covert's was associated with milling, specifically grist milling, which would have made it an important destination point for local commerce. Thus, the road was approved in 1852 and confirmed opened by the Lawrence County court on February 15, 1853. Another petition in 1852 by Mahoning Township citizens also asked for a road from Edinburg to Covert's Mill. It too was approved in 1852.⁸ And in 1860, in two separate petitions, citizens of New Castle⁹ and then of North Beaver,¹⁰ requested that the county commissioners build new roads, one leading from New Castle to Covert's Mill, known as the Old County Line Road, and for a road from State Road to Covert's Mill. Viewers were delegated to examine and evaluate the proposed routes, but they concluded that they would not be a public benefit and the petitions were rejected.

As road improvements made destination points more accessible, unimproved river crossings gained the attention of travelers and county officials. Progress was slow primarily for economic reasons. Approximately a quarter century after roads were improved to Covert's Mill, citizens began petitioning for a bridge to be built at Covert's Crossing¹¹ in 1878, when Union and Mahoning Townships asked the judge of the Court of Quarter Sessions for a bridge "at the place where the public road leading from the Edinburg road to New Castle crosses said river between the townships of Union and Mahoning, being at what is generally known as "Covert's Ford" said ford being frequently rendered impassable by reason of ice and high waters."¹² Nevertheless, in spite of the fact that important and much used local roads led to and crossed at Covert's Ford, the delegated viewers of the proposed bridge at Covert's Ford agreed that it was "not necessary or at least the necessity for such bridge is not sufficient to justify the expense that would be incurred in the erection of such bridge."¹³ It was clear that the county's primary problem was lack of sufficient funds to pay for such a long span across the Mahoning River.

⁷ Lawrence County Roads Book 1, December 1851, p. 90.

⁸ *Ibid.*, July 7, 1852, p. 122.

⁹ *Ibid.*, February 15, 1860, p. 234.

¹⁰ *Ibid.*, May 28, 1860, p. 244.

¹¹ Beginning in the 1870s, the place name used in documents refers to a crossing only and no longer mentions milling activities at Covert's.

¹² *Ibid.*, May 29, 1878, p. 45.

¹³ *Ibid.*

Five years passed before another petition was prepared by the citizens of the three townships of Union, Mahoning, and North Beaver who were immediately affected by the lack of a bridge at Covert's Crossing. On September 27, 1882, a petition by Mahoning Township citizens once again asked the January Term of the Court of Quarter Sessions of Lawrence County to have viewers evaluate the site at Covert Station No. 3 for a bridge at the place where the road leading from the Harbor Bridge to Covert's Station crosses the Mahoning River. The reasons given for requesting the bridge were the same as those in the 1878 petition. This time the viewers agreed with the petitioning citizens, but added that there was a need to change the bed or course of the public road to be connected to the proposed bridge. Jos. Craig, St. S. Chambers, and H.M. Kirk owned the lands potentially affected by the road change. Without any reasons given in the commissioners' minutes, the petition was not approved.¹⁴

Seven months later, on April 17, 1883, another petition for viewers for a bridge site met with approval and also included recommendations for road changes. This time St. S Chambers introduced a series of legal actions taking exception to the viewers' opinions about changing the road direction. The legal actions, as listed in the Lawrence County Roads Book, date from September 22, 1883, to January 12, 1885.¹⁵ The conclusions of the court are not mentioned, but from comparison of the 1872 maps with the current USGS map (Figure 1) of the site, the road appears to maintain its historic course except for a minor turn southeastward from Union Township before the road enters the river plateau.¹⁶ Commissioners' records do not exist stating that a bridge actually had been approved for erection, but a petition entered on June 20, 1888, for the September Quarter Sessions mentions all the previous petitions. It also states that on April 30, 1887, the county had entered into a contract with A.G. Wagoner, a local mason, for the construction of the masonry for the new bridge for the sum of \$420 according to the plans and specifications provided. It further goes on to say that on August 1, 1887, a contract had been

¹⁴ Ibid., September 27, 1883, p. 12.

¹⁵ Ibid., April 30, 1883;

¹⁶ According to William Humphrey of Frank B. Taylor Engineering, this jag section of the road is troublesome in not providing a clear view of the bridge area before driving down to it. Coverts Crossing Bridge is slated for replacement in the near future at which time the new bridge will cross the river at another spot. Personal communication from Mr. William Humphrey, Engineer, Frank B. Taylor Engineering, New Castle, Pennsylvania.

signed with the Morse Bridge Company¹⁷ of Youngstown, Ohio “for the erection of the superstructure at a price of \$6,000 and the old iron bridge over the Neshannock Creek at Pittsburgh St. in the City of New Castle...that said bridge is now completed and in use.”¹⁸

Although not stated specifically, the commissioners’ report quoted above may be interpreted to mean that the Coverts Crossing Bridge was built as a combination of a reused bridge from Pittsburgh St. in New Castle with a new section fabricated by the Morse Bridge Company. The bridge was inspected and approved on September 14, 1888.¹⁹ Considering the past hesitation by county commissioners to build a bridge at Covert’s Crossing because of economic reasons, the reuse of an older bridge joined to a new segment would be a budget saving proposition. It would also explain the use of building technologies from two historical periods as currently seen in the bridge structure as it stands today.

BRIDGE DESIGN AND TECHNOLOGY

The structure of Coverts Crossing Bridge, as a whole—both reused and new components—exhibits transitional bridge technology just before the turn of the twentieth century with its use of steel, cantilevering, and two kinds of joinery methods. Steel for bridge building began to be used in 1878, and cantilevered bridges were relatively rare until the final quarter of the nineteenth century. Both pin and rivet connection techniques are in evidence (Figure 2). The southern section, an iron bridge that originally stood over the Neshannock Creek at Pittsburgh Street in the City of New Castle, is pin connected with gusset ornamentation involving a cloverleaf pattern (Figure 3). The originally designed segment of the Coverts Crossing Bridge cantilevered on the north (Figure 4) has riveted lower chords (Figure 5) and a geometric field of circles in its gussets (Figure 6). The use of rivets was rare before the 1890s, but with the advent of portable pneumatic drivers, rivet technology eventually displaced pin-connected bridges.

¹⁷ The Morse Bridge Company was founded in 1878 and renamed the Youngstown Bridge Company between 1888 and 1891 (*Historic Highway Bridges in Pennsylvania*, Commonwealth of Pennsylvania, Pennsylvania Historical Commission, PennDOT, Harrisburg, PA, 1986, p. A-3.)

¹⁸ *Ibid.*, June 20, 1888, p. 182.

¹⁹ *Ibid.*, p. 183.

MORSE BRIDGE COMPANY

The Lawrence County Commissioners contracted with the Morse Bridge Company to erect the Coverts Crossing Bridge. Formed in January 1878 by Henry G. Morse (1850-1903) and his brother C.J. Morse, the Morse Bridge Company appeared at a time when the first iron bridges were being built throughout the country. The company employed 100 workers and fabricated iron bridges, roofs, and boilers. Component parts and whole bridges were shipped from the company by two railroads that served the plant.²⁰ Morse Bridge Company advertised itself as capable of executing a complete construction job and then shipping its product, a finished bridge that would be ready for traffic, direct by railroad to the customer.²¹

SIGNIFICANCE

The 301' long, two-span Coverts Crossing Bridge is an excellent early example of a steel cantilever, Pratt through-truss bridge possessing good integrity of design, workmanship, and materials. Components of the bridge are representative of the many bridges built throughout Pennsylvania during the last quarter of the nineteenth century that emphasized reduced material requirements and increased load-handling capacities. The construction of the bridge in 1887 was part of early, pre-automotive improvements to the local road system connecting Union and Mahoning Townships to the nearby city of New Castle and more distant economic centers, such as Pittsburgh.

ACKNOWLEDGEMENTS

Research for this project was greatly facilitated by assistance from Bob Presner, Lawrence County Historical Society, who provided historical maps of the Coverts Crossing Bridge; from Beverly Zona, History Room, Lawrence Public Library, who helped locate information on the Coverts and the bridge mason in contemporary newspapers; and from William Humphrey, County Engineer, of Frank B. Taylor Engineering, New Castle, Pennsylvania, who provided a copy of Dzodin's HAER report (No. PA-474), written in 1998.

²⁰ Youngstown, Ohio, Directory, 1880-1881.

²¹ Edwards, Early American Bridges, 102.

BIBLIOGRAPHY

Atlas of the County of Lawrence and the State of Pennsylvania. Philadelphia: G.M. Hopkins & Co., 1872.

Dzodin, Joel. "Coverts Crossing Bridge." HAER No. PA-474. Historic American Engineering Record, National Park Service, U.S. Department of the Interior.

Edwards, Llewellyn Nathaniel. A Record of History and Evolution of Early American Bridges. Orono, Maine: University Press, 1959.

Hazen, Aaron L. 20th Century History of New Castle and Lawrence County, Pennsylvania and Representative Citizens. Chicago: Richmond-Arnold Publishing Co., 1908.

Historic Highway Bridges in Pennsylvania. Commonwealth of Pennsylvania, Pennsylvania Historical Commission, PennDOT, Harrisburg, PA, 1986.

Lawrence County Records. Lawrence County Documents. On file at Lawrence County Historical Society, New Castle, Pennsylvania.

MacDonald, Douglas H. Phase I, II, III Archaeological Investigations: The Covert's Crossing Site (36LR75). Coverts Crossing Bridge Replacement Project, Union and Mahoning Townships, Lawrence County, Pennsylvania. Vol. 1 of 2. ER 96-8227-073. Prepared for Frank B. Taylor Engineering, New Castle, PA 16101, by GAI Consultants, Inc., Monroeville, Pennsylvania.

Youngstown, Ohio, Directory, 1880-1881.

APPENDIX A—Chronology

- 1851-1860 Lawrence County citizens begin petitioning the county for road improvements leading to Covert's Crossing (also referred to as Covert's Mill and Covert's Ford).
- 1878 The first petition for a bridge at Covert's Crossing is made by citizens of Union and Mahoning Townships but was rejected by the commissioners.
- 1882 A petition in September for a bridge at Covert's Crossing is evaluated, but with recommendations for road changes. Petition is rejected.
- 1883 A petition in April is considered, but again with road changes, which causes a potentially affected landowner to proceed with court actions.
- 1883-1885 Court procedures are in effect during this time period with exceptions to the recommendations of the county viewers for road changes.
- 1887 A contract is signed for \$420 with A.G. Wagoner for masonry work for the Coverts Crossing Bridge.
- A contract is signed for \$6,000 with the Morse Bridge Company of Youngstown, Ohio for the erection of the superstructure of the Coverts Crossing Bridge.
- 1888 Coverts Crossing Bridge is inspected and approved by county officials.

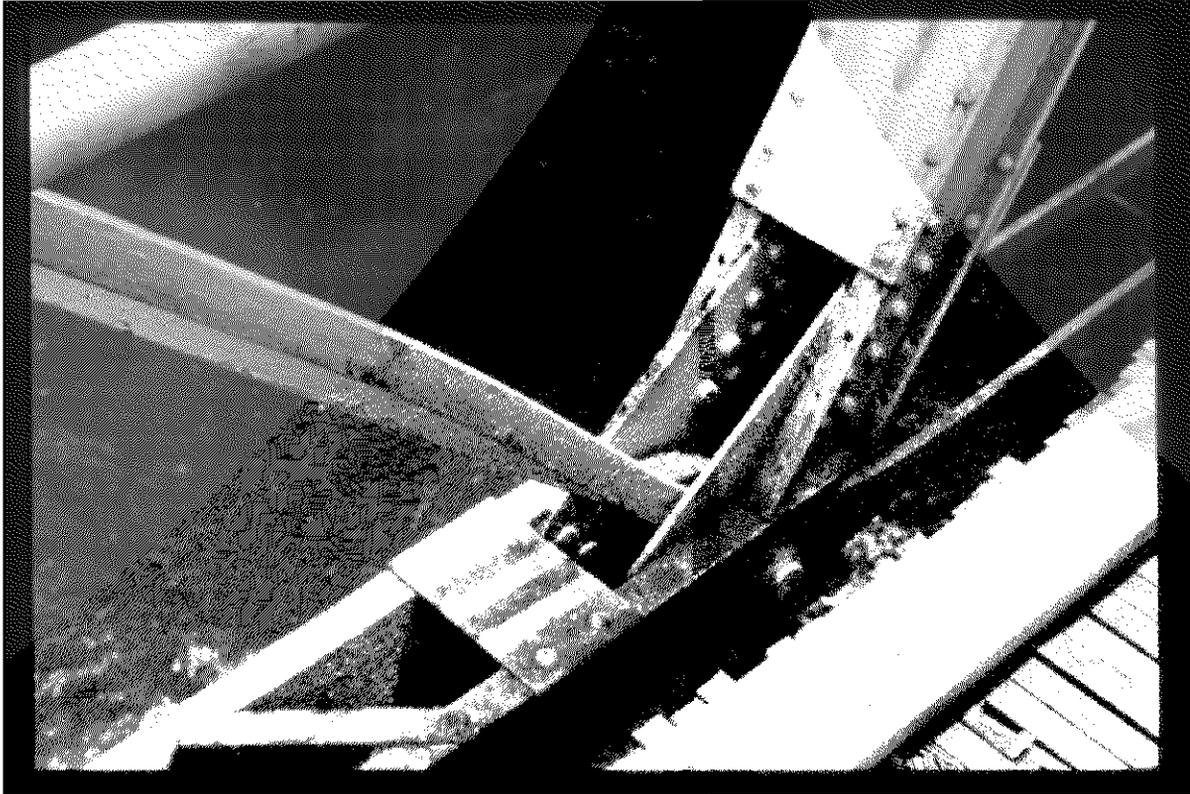


Figure 2. The western segments of the bridge are joined by rivets and pin construction methods. Field photograph.



Figure 3. The southern section of the bridge originally stood over the Neshannock Creek along Pittsburg Street in New Castle. This detail shows pin connection with gusset ornamentation of cloverleaves. Field photograph.



Figure 4. View of west side of bridge showing mid-river pier and cantilevered north section of the Coverts Crossing Bridge. Field photograph.

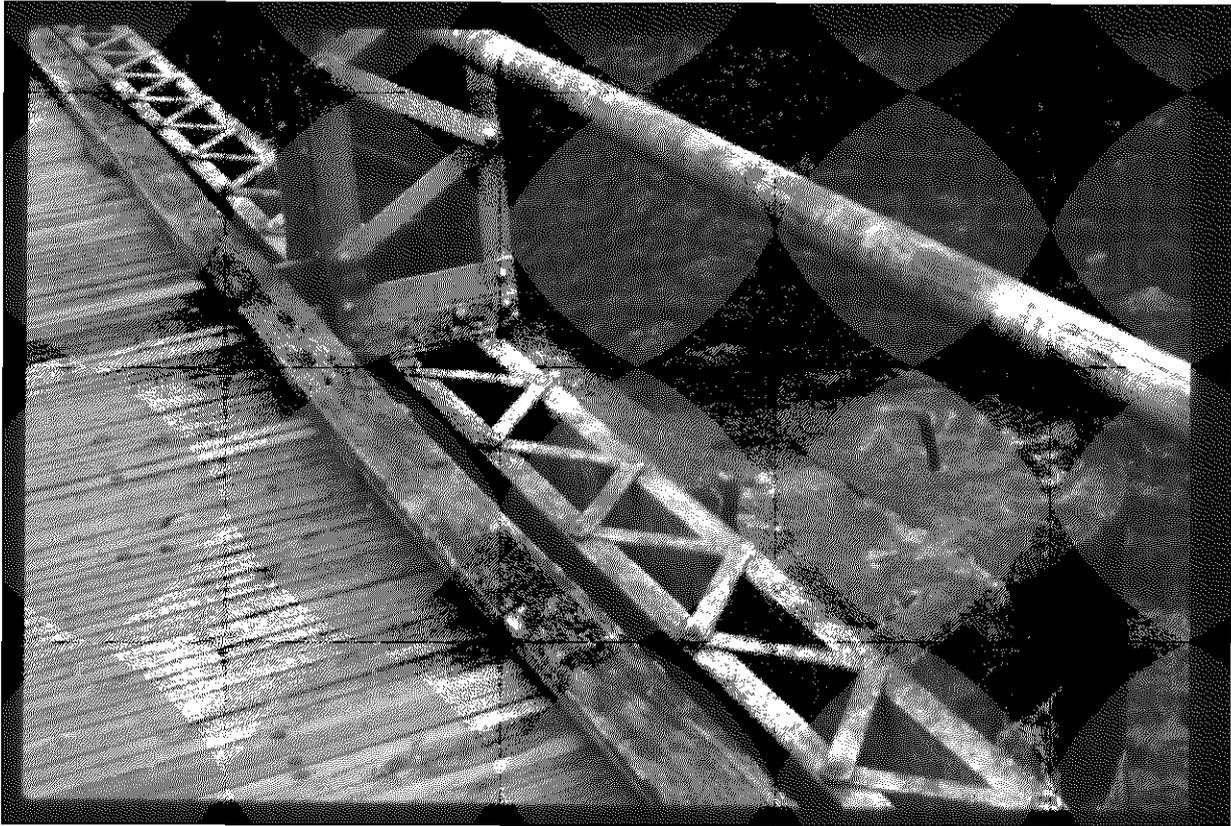


Figure 5. The northern section of the bridge has riveted lower chords as shown in this view.
Field photograph.



Figure 6. The gusset ornamentation on the north end consists of lattice work that implies circular shapes. Field photograph.